

REMARKS/ARGUMENTS

Reconsideration and allowance in view of the foregoing amendment and the following remarks are respectfully requested.

Claims 1 and 3-6 remain pending.

The Examiner indicated that Figure 1 should be designated a legend such as -- Prior Art --. Original Figure 1 has been replaced by a replacement sheet in which Figure 1 is labeled -- Prior Art -- as suggested by the Examiner.

Claim 3 was objected to because of a noted informality. Claim 3 has been revised as suggested by the Examiner.

Claims 1-6 were rejected under 35 USC 112, second paragraph, as being indefinite. These claims have been reviewed and revised above bearing in mind the Examiner's comments. It is believed that all claims are now in full compliance with 35 USC 112, all paragraphs, and it is therefore respectfully requested that the rejection be withdrawn.

Original claims 1 and 2 were rejected under 35 USC 102(b) as being anticipated by Jones. Claim 6 was also rejected under 35 USC 103 as unpatentable over Jones. Applicant respectfully traverses these rejections.

The present invention is directed to a termination and sealing system for two-stage legs of in-series cyclones used for separating out solids in gas-solid suspension in fluid catalytic cracking (FCC) processes. More specifically, the claimed invention provides a termination system which joins the lower end of the leg of the secondary cyclone and the leg of the primary cyclone, forming a single primary and secondary cyclone leg complex where the solids collected by both cyclones are combined and these combined solids are simultaneously discharged by means of a single leg termination that is radius-curved and devoid of movable sealing parts. The termination

configuration allows improved, efficient sealing in such a manner as to prevent the re-entrainment of particulates, and to reduce or eliminate the risk of "packing-down" of the dense bed of particles collected in the cyclones. It avoids the mechanical failure which may arise in movable sealing systems, since flapper or trickle valves are eliminated. The result of its use is a substantial increase in efficiency and a consequent reduction of particulate emission.

It is acknowledged in the specification, for example at page 6, lines 5-9, that the joining of the legs of a primary cyclone and a secondary cyclone such that the solid materials collected by both cyclones and is discharged by means of a single valve at the end of the combined section of the cyclone, is a known technique. However, in this respect, the claimed invention must be considered as a whole and thus the novelty of the invention derives in particular from the elimination of such a mechanical valve and the provision in its stead of a separator leg termination that is radius-curved, immersed in the fluidized bed, and devoid of moving parts. It is respectfully submitted that such a combination is not anticipated by any of the prior art of record.

Anticipation under Section 102 of the Patent Act requires that a prior art reference disclose every claim element of the claimed invention. See, e.g., Orthokinetics, Inc. v. Safety Travel Chairs, Inc., 806 F.2d 1565, 1574 (Fed. Cir. 1986). While other references may be used to interpret an allegedly anticipating reference, anticipation must be found in a single reference. See, e.g., Studiengesellschaft Kohle, G.m.b.H. v. Dart Indus., Inc., 726 F.2d 724, 726-27 (Fed. Cir. 1984). The absence of any element of the claim from the cited reference negates anticipation. See, e.g., Structural Rubber Prods. Co. v. Park Rubber Co., 749 F.2d 707, 715 (Fed. Cir. 1984). Anticipation is not shown even if the differences between the claims and the prior art reference are insubstantial and the missing elements could be supplied by the knowledge of one skilled in the art. See, e.g., Structural Rubber Prods., 749 F.2d at 716-17.

The Examiner cites column 1, lines 32-48 of Jones as allegedly teaching multiple cyclones discharging solids into a common dip-leg. It is respectfully noted that the cited passage in Jones is a general description of the prior art; Jones does not illustrate or discloses such a joinder having a single leg termination that is radiused. As such, it is respectfully submitted that Jones teaches away from the combination claimed and away from the prior art mentioned in column 1.

Even if Jones is considered to teach the provision of a radius curve as a termination to a separator leg which joins two diplegs, it is respectfully submitted that Jones does not anticipate the combination claimed, wherein the separator leg termination is devoid of movable sealing parts. Quite the contrary, Jones' invention is specifically limited to a mechanical closure placed on the dip-leg and selectively released. Thus, Jones does not anticipate the combination claimed because Jones does not teach, in combination, a separator leg joining the leg of a secondary cyclone and the leg of a primary cyclone and wherein the separator leg terminates in a radius-curved separator leg termination that is devoid of movable sealing parts. Further, it would be unobvious to modify Jones to provide the recited combination because to do so would be directly contrary to Jones' teachings of that which constitutes his invention. It can never be obvious to modify a primary reference so as to destroy that which is the invention of the primary reference. Indeed, it is not proper under 35 USC 103 to modify a prior art patent in a manner which would destroy that on which the invention of the prior art patent was based. Ex parte Hartman, 186 USPQ 366,67 (PTO Bd. App. 1974).

For all the reasons advanced above, reconsideration and withdrawal of the rejection of claim 1 over Jones is respectfully requested.

Claim 1 was also rejected under 35 USC 102(b) as anticipated by Baumann et al. Applicant respectfully traverses this rejection. However, this rejection has been mooted by the incorporation of the limitations of dependent claim 2 into amended claim 1.

Claim 3 was rejected under 35 USC 103 as unpatentable over Jones in view of Danielsen. Applicant respectfully traverses this rejection.

Claim 3 is submitted to be patentable over Jones for the reasons advanced above. The Examiner's further reliance on Danielsen does not overcome the deficiencies of Jones noted above. In fact, Danielsen also teaches away from the invention by providing a movable sealing part at the distal end of the leg structure. It is therefore respectfully submitted that claim 3 is also allowable over the prior art of record.

Claims 4 and 5 were rejected under 35 USC 103 as unpatentable over Jones in view of Luckenbach. Applicant respectfully traverses this rejection.

These claims are submitted to be patentable over Jones for the reasons advanced above. The Examiner's further reliance on Luckenbach does not overcome the deficiencies of Jones noted above. In fact, Luckenbach also teaches away from the claimed invention because Luckenbach discloses movable sealing parts in direct contradiction to the combination claimed in applicant's claim 1 and the claims dependent therefrom. It is therefore respectfully submitted that claims 4 and 5 are also patentable over the prior art of record.

Claims 3 and 6 were rejected under 35 USC 103 as unpatentable over Baumann et al. and claims 4 and 5 were rejected as unpatentable over Baumann in view of Luckenbach. For the reasons advanced above, these rejections have been mooted by the amendment to claim 1.

Claims 1-3 were also rejected under 35 USC 103 as unpatentable over Crosby in view of Danielsen. Applicant respectfully traverses this rejection.

Even if Crosby were modified in view of Danielsen, it is respectfully submitted that the invention claimed would not be anticipated nor obvious. In this regard, in Crosby, the junction of the leg is relative to the same stage. More particularly, with

reference to Figure 1 of Crosby, it can be seen that first stage cyclone separators 13 and 14 have their diplegs joined together in discharge display 20. Similarly, the two second stage cyclone separators 15 and 16 have their diplegs joins together in discharge dipleg 22. Thus, all the joined legs according to Crosby's disclosure belong the same stage. In contrast, according to the claimed invention, a second stage dipleg is joined with a first stage dipleg so that the joined legs belong to different stages. It is therefore respectfully submitted that the entire assembly of Crosby is different from that of the invention. Moreover, even if the Danielsen trickle valve were provided for either dipleg 20 and/or dipleg 22, the claimed invention would still not be provided because, contrary to the invention recited in amended claim 1, Danielsen teaches a movable sealing component at the distal end of the curved tube 24 as illustrated in particular in Figures 2 and 3. Thus, the combination of Crosby and Danielsen does not meet the limitations of applicant's claims but instead would teach away from the claimed invention. It is therefore respectfully submitted that the invention claimed in claims 1 and 3 is not anticipated by nor obvious from Crosby and Danielsen.

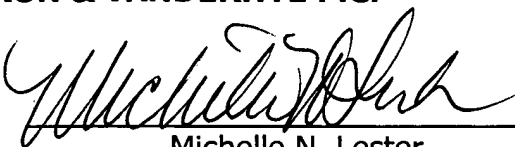
Claims 4 and 5 were rejected under 35 USC 103 as unpatentable over Crosby and Danielsen and further in view of Luckenbach. These claims are submitted to be patentable over the Crosby/Danielsen combination for the reasons advanced above. The Examiner's further reliance on Luckenbach does not overcome the deficiencies of the primary combination. In fact, Luckenbach teaches away from the invention by providing a movable sealing part at the distal end of the leg structure. It is therefore respectfully submitted that the invention claimed is not anticipated by nor obvious from Crosby further taken alone or in combination with Danielsen and/or Luckenbach.

All objections and rejections having been addressed, it is respectfully submitted that the present application is in condition for allowance and an early Notice to that effect is earnestly solicited.

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Respectfully submitted,

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